IN THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Original) A memory medium that stores program instructions implementing an application programming interface (API) for synchronizing multiple devices in a system, wherein the API comprises:

a plurality of functions invocable in a program to synchronize a plurality of devices, wherein each function is executable to perform a respective functionality related to synchronizing the plurality of devices, and wherein at least one of the plurality of functions is executable to access a plurality of instrument drivers corresponding respectively to the plurality of devices to synchronize the plurality of devices;

wherein, in synchronizing the plurality of devices, the plurality of functions are executable to:

determine a trigger clock signal for each of the plurality of devices; and

synchronize the plurality of devices based on the determined trigger clock signals.

2. (Original) The memory medium of claim 1, wherein the API further comprises:

a plurality of attributes, wherein each attribute corresponds to a respective property of the system related to synchronization of the plurality of devices, and wherein each attribute is configurable to specify the respective property.

3. (Original) The memory medium of claim 2, wherein the plurality of attributes comprises a set of attributes for each respective device of the plurality of devices.

4. (Original) The memory medium of claim 3, wherein the set of attributes for each respective device of the plurality of devices comprises one or more of:

one or more trigger attributes; and

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one or more trigger clock attributes.

5. (Original) The memory medium of claim 4, wherein the one or more trigger attributes comprises one or more of:

a start trigger master session attribute, specifying which of the plurality of devices provides a start trigger;

a reference trigger master session attribute, specifying which of the plurality of devices provides a reference trigger;

a script trigger master session attribute, specifying which of the plurality of devices provides a script trigger;

a pause trigger master session attribute, specifying which of the plurality of devices provides a pause trigger; and

a reference trigger from non-reference trigger attribute, indicating that the reference trigger for the respective device is from a non-reference trigger from another respective device.

6. (Original) The memory medium of claim 4, wherein the one or more trigger clock attributes comprises one or more of:

a trigger clock synchronization pulse source attribute, specifying a source of a synchronization pulse;

a trigger clock synchronization pulse output terminal attribute, specifying a destination of the synchronization pulse; and

a trigger clock minimum period attribute, specifying a minimum period for the trigger clock.

7. (Original) The memory medium of claim 4, wherein the set of attributes for each of the plurality of devices further comprises:

a sample clock delay attribute, specifying a delay for a sample clock of a respective one of the plurality devices relative to others of the plurality of devices.

8. (Original) The memory medium of claim 2, wherein the plurality of functions comprises:

a synchronize function, executable to synchronize trigger clock signals for the plurality of devices; and zero or more of:

a configuration function, executable to configure at least a subset of the plurality of attributes for synchronization of the plurality of devices;

an initiate function, executable to initiate synchronous operation of the plurality of devices;

a done function, executable to monitor the operation of the plurality of devices; and

a wait until done function, executable to indicate when operation of the plurality of devices is done.

9. (Original) The memory medium of claim 8, wherein the plurality of functions further comprises one or more of:

a get error description function, executable to provide an error description based on an error code; and

a get extended error information function, executable to provide extended error information for an error.

10. (Original) The memory medium of claim 8, wherein the configuration function comprises a configuration for homogeneous triggers function, wherein said at least a subset of the plurality of attributes comprises attributes related to synchronization of devices with homogeneous triggers.

11. (Original) The memory medium of claim 10, wherein the configuration for homogeneous triggers function is executable to configure one or more of:

one or more reference clocks;

one or more start triggers;

one or more reference triggers;

one or more script triggers; and

one or more pause triggers.

12. (Original) The memory medium of claim 11, wherein the devices with homogeneous triggers are comprised in a single chassis.

13. (Original) The memory medium of claim 2, wherein the plurality of functions comprises one or more access functions for the plurality of attributes.

14. (Original) The memory medium of claim 1, wherein each function of the plurality of functions comprises a respective text-based function, wherein the program comprises a text-based program, and wherein during execution of the text-based program the text-based function executes to perform the respective functionality.

15. (Original) The memory medium of claim 1, wherein each function of the plurality of functions comprises a respective graphical program node, wherein the program comprises a graphical program, and wherein during execution of the graphical program the graphical program node executes to perform the respective functionality.

16. (Original) The memory medium of claim 15, wherein each of the respective graphical program nodes are comprised in a palette, and wherein each of the respective graphical program nodes are selectable from the palette for inclusion in the graphical program.

17. (Original) The memory medium of claim 1, wherein, in determining the trigger clock signal for each of the plurality of devices, the plurality of functions are executable to determine the trigger clock signal based on one or more of:
a common sample clock;
a common reference clock; and
a specified minimum trigger clock period.

18. (Original) The memory medium of claim 17, wherein, in synchronizing the plurality of devices based on the determined trigger clock signals, the plurality of functions are executable to:

equalize phase of the common sample clock and/or the common reference clock of each of the plurality of devices;

equalize phase of the trigger clock signals of each of the plurality of devices;

adjust data latencies for each of the plurality of devices; and

condition driving and/or reception of triggers on trigger enable signals generated from the trigger clock of each of the plurality of devices.

19. (Currently Amended) An application programming interface for synchronizing a plurality of devices, comprising a plurality of synchronization functions and a plurality of synchronization attributes, wherein the plurality of synchronization functions comprises[[one]]:

a synchronize function, executable to synchronize trigger clock signals for the plurality of devices; and

zero or more of:

a configuration function, executable to configure at least a subset of the plurality of attributes for synchronization of the plurality of devices;

an initiate function, executable to initiate synchronous operation of the plurality of devices;

a done function, executable to monitor the operation of the plurality of devices; and

a wait until done function, executable to indicate when operation of the plurality of devices is done;

wherein the plurality of synchronization attributes comprises one or more of:

one or more trigger attributes for each device; and

one or more trigger clock attributes for each device.

20. (Original) The application programming interface (API) of claim 19, wherein the API comprises one or more of:

a set of text-based program functions, invocable from a text-based program; and

a set of graphical programming nodes, invocable from a graphical program.

21. (New) A method of synchronizing multiple devices in a system, the method comprising:

including one or more function calls in a program in accordance with an application programming interface (API) for synchronizing multiple devices in the system, wherein the API comprises a plurality of functions invocable in a program to synchronize a plurality of devices, wherein each function is executable to perform a respective functionality related to synchronizing the plurality of devices, and wherein at least one of the plurality of functions is executable to access a plurality of instrument drivers corresponding respectively to the plurality of devices to synchronize the plurality of devices; and

executing the program, including executing the one or more function calls to invoke one or more of the plurality of functions to synchronize the plurality of devices by:

determining a trigger clock signal for each of the plurality of devices; and

synchronizing the plurality of devices based on the determined trigger clock signals.